E 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XB832]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Marine Site Characterization Surveys off New Jersey by NextEra Energy Transmission MidAtlantic Holdings, LLC

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; proposed incidental harassment authorization; request for comments on proposed authorization and possible renewal.

SUMMARY: NMFS has received a request from NextEra Energy Transmission MidAtlantic Holdings, LLC (NEETMA) for authorization to take marine mammals incidental to high-resolution geophysical (HRG) site characterization surveys off the coast of New Jersey. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an incidental harassment authorization (IHA) to incidentally take marine mammals during the specified activities. NMFS is also requesting comments on a possible one-time, one-year Renewal that could be issued under certain circumstances and if all requirements are met, as described in **Request for Public Comments** at the end of this notice. NMFS will consider public comments prior to making any final decision on the issuance of the requested MMPA authorization and agency responses will be summarized in the final notice of our decision.

DATES: Comments and information must be received no later than [*INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER*].

ADDRESSES: Comments should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service. Written comments should be submitted via email to *ITP.Potlock@noaa.gov*.

Instructions: NMFS is not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period. Comments, including all attachments, must not exceed a 25-megabyte file size. All comments received are a part of the public record and will generally be posted online at *www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act* without change. All personal identifying information (*e.g.*, name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

FOR FURTHER INFORMATION CONTACT: Kelsey Potlock, Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act*. In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the "take" of marine mammals, with certain exceptions. sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq*.) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are proposed or, if the taking is

limited to harassment, a notice of a proposed incidental harassment authorization is provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other "means of effecting the least practicable adverse impact" on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as "mitigation"); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth.

The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq*.) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our proposed action (*i.e.*, the issuance of an IHA) with respect to potential impacts on the human environment. This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has preliminarily determined that the issuance of the proposed IHA qualifies to be categorically excluded from further NEPA review.

We will review all comments submitted in response to this notice prior to concluding our NEPA process or making a final decision on the IHA request.

Summary of Request

On February 4, 2022, NMFS received a request from NextEra Energy Transmission MidAtlantic Holdings, LLC (NEETMA) for an IHA to take marine mammals incidental to marine site characterization surveys occurring in two locations (Northern and Southern survey areas) off the coast of New Jersey in the New Jersey Offshore Transmission Facilities Project (NJOTF or Project). The application was deemed adequate and complete on April 1, 2022. NEETMA's request is for take of a small number of 15 marine mammal species (consisting of 16 stocks) by Level B harassment only. Neither NEETMA nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

Description of Proposed Activity

Overview

NEETMA proposes to conduct HRG and geotechnical surveys as part of the New Jersey Offshore Transmission Facilities Project NJOTF off the coast of New Jersey. The surveys will take place along proposed submarine export cable routes and at locations for potential offshore platforms. Geotechnical survey activities would include the use of vibracores and/or cone penetration tests (CPTs), to identify and characterize the seabed conditions vertically for project planning and design, and to collect data to identify paleolandscapes.

The purpose of the proposed surveys are to support the siting and design of offshore facilities, including offshore platforms for converter stations and offshore submarine transmission cables. As many as three survey vessels may operate concurrently as part of the proposed surveys. Underwater sound resulting from NEETMA's proposed site characterization survey activities, specifically HRG surveys,

has the potential to result in incidental take of marine mammals in the form of behavioral harassment.

Dates and Duration

The estimated duration of the activity is expected to consist of up to 320 total survey days over the course of a single year within the two survey areas (Table 1). As multiple vessels (*i.e.,* three survey vessels) may be operating concurrently across both survey areas, each day that a single survey vessel is operating constitutes a single survey day. Therefore, it is expected that the anticipated 320 survey days would occur over a shorter aggregate duration. This schedule is based on 24-hour operations that may be conducted at any time throughout the year. The schedule presented here for this proposed project has accounted for potential down time due to inclement weather or other project-related delays. The IHA would be effective for a period of one year.

Table 1. Number of Survey Days that NEETMA Plans to Perform the Described HRG Survey Activities

Survey Area	Number of active survey days expected[1]
Northern	248
Southern	72
Total: 320 days	

1- Up to three total survey vessels may be operating within both of the survey areas concurrently.

Specific Geographic Region

NEETMA's proposed activities would occur in the Northwest Atlantic Ocean within Federal and state waters (Figure 1). Surveys would occur in both the Northern and Southern survey areas along potential areas for future offshore platforms used for converter stations and potential offshore submarine transmission cable routes.

NEETMA's proposed activities would occur within the NJOTF. The total site area is approximately 1,861,198 acres (2,908.121 square miles (mi^2); 7,532 square kilometers (km^2)) and extends approximately 51 nautical miles (nm; 59.03 miles (mi); 95 kilometers (km)) offshore at its furthest point with some coastal surveys planned. However, the expected area to be surveyed is much smaller than the total site area, consisting of 6,254 km^2 in the Northern survey area and 1,278 km^2 in the Southern. This equates to approximately 5,183.97 km^2 of ensonified area over the duration of the activities.

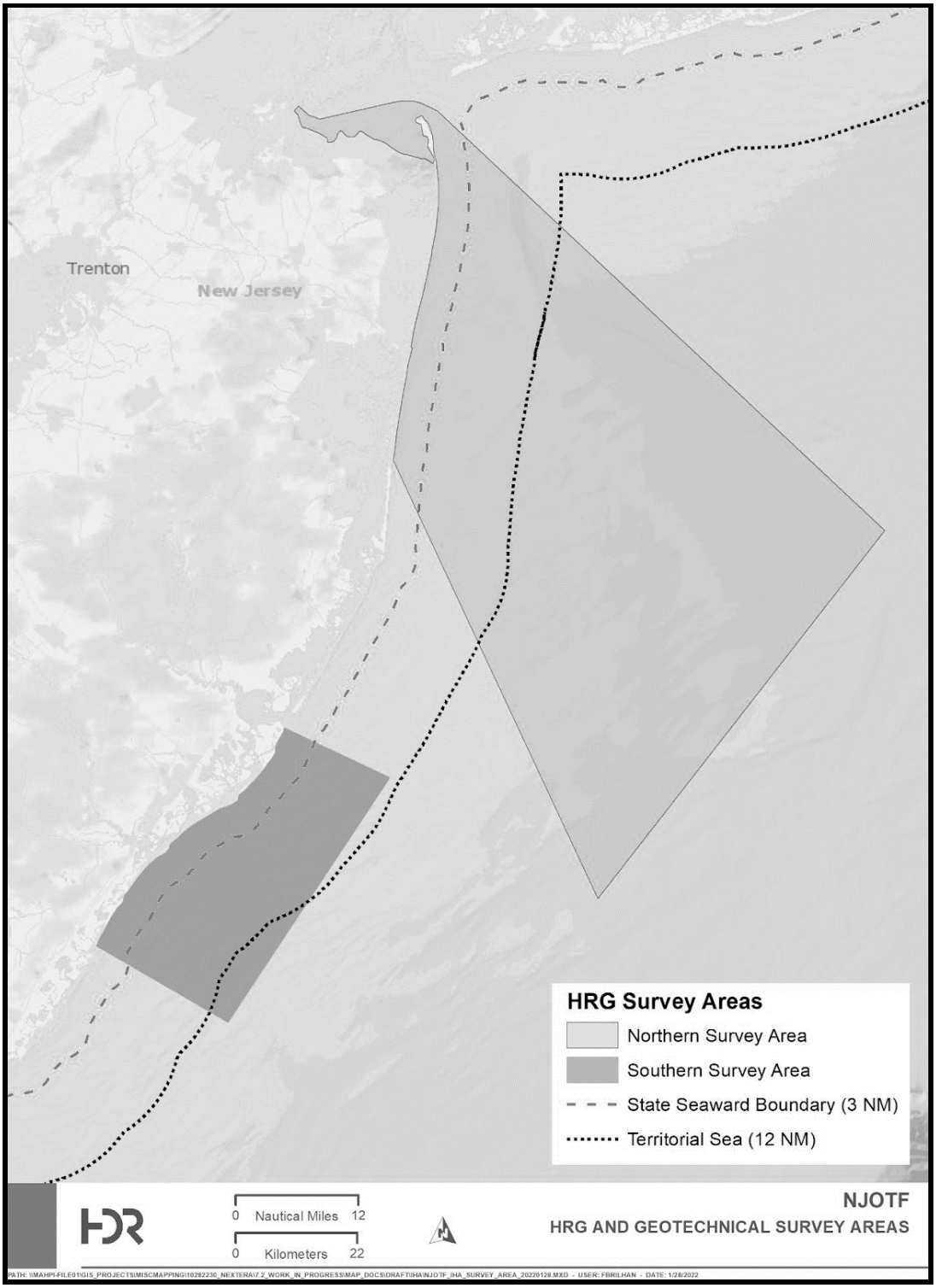

Figure 1– Proposed survey areas for the New Jersey Offshore Transmission Facilities Project (NJOTF Project) HRG&G Surveys.

Detailed Description of Specific Activity

NEETMA's proposed marine site characterization surveys include HRG and geotechnical survey activities. These surveys would occur within both the Northern and Southern areas off New Jersey, as specified in Figure 1. The Northern and Southern Project areas are approximately 7,532 km^2 (1,861,197.73 acres) and are located approximately 95 kilometers offshore of New Jersey at the furthest point. For the purposes of this proposed IHA, both the Northern and Southern areas are collectively referred to as the survey sites. NEETMA's survey activities are anticipated to be supported by vessels, which will maintain a speed of approximately to 4 knots (kn; 7.4 kilometer per hour (km/h)) while transiting survey lines. The proposed HRG and geotechnical survey activities are described below.

Proposed Geotechnical Survey Activities

NEETMA's proposed geotechnical activities would include the drilling of vibracores and/or CPTs. Similar proposed activities have been previously analyzed, *e.g.,* see the proposed 2020 **Federal Register** notice (85 FR 7926; February 12, 2020) and the proposed 2022 **Federal Register** notice (87 FR 4200; January 27, 2022) for Atlantic Shores' site characterization surveys. The same discussion by NMFS to not analyze the geotechnical activities further that was included in that notice (*i.e.*, as they do not constitute take of marine mammals) was determined to apply to this proposed project. In these notifications, NMFS determined that the likelihood of the proposed geotechnical surveys resulting in harassment of marine mammals was to be so low as to be discountable. As this information remains applicable and NMFS' determination has not changed, these activities will not be discussed further in this proposed notification.

Proposed Geophysical Survey Activities

NEETMA has proposed that HRG survey operations would be conducted continuously 24 hours a day. Based on 24-hour operations, the estimated total duration of the proposed activities would be approximately 320 survey days. This includes 248 days

of survey activities in the Northern area and 72 days in the Southern area (refer back to Table 1). As previously discussed above, this schedule does include potential down time due to inclement weather or other project-related delays. The HRG survey activities will be supported by vessels of sufficient size to accomplish the survey goals in each of the specified survey areas. It is assumed surveys in both of the identified survey areas will be executed by a total of three vessels during any given campaign (*i.e.*, up to three vessels operating collectively across the 320 days of the proposed project but each vessel may operate concurrently in either the Northern or Southern survey areas). HRG survey equipment will either be mounted to or towed behind the survey at a typical survey speed of approximately 4 knot (7.4 km per hour).

The geophysical survey activities proposed by NEETMA may include the use of the following equipment:

- Shallow Penetration Sub-bottom Profilers (SBPs; Compressed High-Intensity Radiated Pulses [CHIRPs]);
- Medium penetration SBPs (Boomers);
- Medium penetration SBPs (Sparkers);
- Parametric SBPs, also called sediment echosounders;
- Ultra-short Baseline (USBL) Positioning and Global Acoustic Positioning System (GAPS);
- Multibeam echosounder (MBES); and
- Seafloor imaging (sidescan sonar).

However, not all of the equipment described above has the potential to harass marine mammals. The MBES and sidescan sonar are known to produce sounds outside the hearing range of marine mammals (>180 kHz); therefore these are not discussed further in this notice as they are not expected to cause harassment. Specifically due to its functionality and source characteristics as USBLs are primarily used to locate the

position(s) of other HRG equipment, USBLs are not expected to have the reasonable potential to cause harassment of marine mammals. Lastly, parametric SBPs tend to operate at high frequencies with very narrow beamwidth, which results in small harassment zones (<4 m). Further, due to the size of the Level B harassment zones produced by these acoustic sources, both NMFS and NEETMA do not expect harassment to occur. Therefore, and as noted in the IHA application, NMFS concurs that the shallow and medium SBPs (Sparkers, Boomers, and CHIRPs) have the potential to cause harassment to marine mammals.

Table 2 identifies the representative survey equipment that may be used in support of planned geophysical survey activities that may also cause the take of marine mammals. The make and model of the listed equipment may vary depending on availability and the final equipment choices will vary depending upon the final survey design, vessel availability, and survey contractor selection. Geophysical surveys are expected to use several equipment types concurrently in order to collect multiple aspects of geophysical data along one transect. Selection of equipment combinations is based on specific survey objectives. All categories of representative HRG survey equipment shown in Table 2 work with operating frequencies <180 kHz.

Table 2. Summary of Representative Equipment Specifications With Operating Frequencies Below 180 kHz

Equipment category	HRG Survey equipment type	Operating frequency ranges (kHZ)	Operational source level ranges (dB re 1 µPa m)	Source Level $l_{0\text{-peak}}$ (dB re 1 µPa m)	Beamwidth ranges (degrees)	Typical pulse durations (millisecond)	Pulse repetition rate (Hz)
Non-parametric shallow penetration SBPs (non-impulsive)							
CHIRPs	ET 216 (2000DS	2-16	195	-	24	20	6

	or 3200 top unit)	2-8					
	ET 424	4-24	176	-	71	3.4	2
	ET 512	0.7-12	179	-	80	9	8
	GeoPulse 5430A	2-17	196	-	55	50	10
	Teledyne Benthose Chirp III – TTV 170	2-7	197	-	100	60	15
Medium penetration SBPs (impulsive)							
Sparker	AA, Dura-spark UHD (400 tips, 500 J)[1]	0.3-1.2	203	211	Omnidirectional	1.1	4
	GeoMarine Geo Spark 2000 (400 tip)[1]	0.05-3	203	213	Omnidirectional	3.4	1
Boomer	AA, triple plate S-Boom (700-1,000 J)[2]	0.1-5	205	211	80	0.6	4

Note: - = not applicable; µPa = micropascal; AA = Applied Acoustics; dB = decibel; ET = EdgeTech; J = joule; Omni = omnidirectional source; re = referenced to; SL = source level; 0-PK = zero-to-peak; RMS = root mean squared; UHD = ultra-high definition.

1- The Dura-spark measurements and specifications provided in Crocker and Fratantonio (2016) were used for all sparker systems proposed for the survey. These include variants of the Dura-spark sparker system and various configurations of the GeoMarine Geo-Source sparker system. The data provided in Crocker and Fratantonio (2016) represent the most applicable data for similar sparker systems with comparable operating methods and settings when manufacturer or other reliable measurements are not available.

2- Crocker and Fratantonio (2016) provide S-Boom measurements using two different power sources (CSP–D700 and CSP–N). The CSP–D700 power source was used in the 700 J measurements but not in the 1,000 J measurements. The CSP–N source was measured for both 700 J and 1,000 J operations but resulted in a lower SL; therefore, the single maximum SL value was used for both operational levels of the S-Boom.

The deployment of HRG survey equipment, including the equipment planned for use during NEETMA's proposed activities, produces sound in the marine environment

that has the potential to result in harassment of marine mammals. Proposed mitigation, monitoring, and reporting measures are described in detail later in this document (please see **Proposed Mitigation** and **Proposed Monitoring and Reporting**).

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of NEETMA's application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS' Stock Assessment Reports (SARs; *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*) and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS's website (*https://www.fisheries.noaa.gov/find-species).*

Table 3 lists all species or stocks for which take is expected and proposed to be authorized for this action, and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2021). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS' SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS's stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known,

that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS' draft 2021 SARs. All values presented in Table 3 are the most recent available at the time of publication and are available in the draft 2021 SARs available online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*.

Table 3. Marine Mammal Species Likely to Occur Near the Project Area That May Be Affected by NEETMA's Activity

Common name	Scientific name	Stock	ESA/MMPA status; strategic (Y/N)[1]	Stock abundance (CV, N min , most recent abundance survey) [2]	PBR	Annual M/SI[3]
Order Cetartiodactyla—Cetacea—Superfamily Mysticeti (baleen whales)						
North Atlantic right whale	*Eubalaena glacialis*	Western North Atlantic	E/D, Y	368 (0; 356; 2020) [5, 6]	0.8	18.6
Fin whale	*Balaenoptera physalus*	Western North Atlantic	E/D, Y	6,802 (0.24; 5,573; 2016)	11	2.35
Humpback whale	*Megaptera novaengliae*	Gulf of Maine	-/-, Y	1,396 (0; 1,380; 2016)	22	12.15
Minke whale	*Balaenoptera acutorostrata*	Canadian East Coastal	-/-, N	21,968 (0.31; 17,002; 2016)	170	10.6
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Sperm whale	*Physeter macrocephalus*	North Atlantic	E/D, Y	4,349 (0.28; 3,451; 2016)	3.9	0
Risso's dolphin	*Grampus griseus*	Western North Atlantic	-/-, N	35,493 (0.19; 30,289; 2016)	303	54.3

Long-finned pilot whale	*Globicephala melas*	Western North Atlantic	-/-, N	39,215 (0.3; 30,627; 2016)	306	21
Short-finned pilot whale	*Globicephala macrorhynchus*	Western North Atlantic	-/-, Y	28,924 (0.24; 23,637, 2016)	236	136
Atlantic white-sided dolphin	*Lagenorhynchus acutus*	Western North Atlantic	-/-, N	93,233 (0.71; 54,443; 2016)	544	26
Common dolphin	*Delphinus delphis*	Western North Atlantic	-/-, Y	172,897 (0.21, 145,216, 2016)	526	399
Common bottlenose dolphin	*Tursiops truncatus*	Western North Atlantic – Offshore	-/-, N	62,851 (0.23; 51,914; 2016)	519	28
		Western North Atlantic – Coastal Migratory	-/D, Y	6,639 (0.41; 4,759; 2016)	48	12.2 - 21.5
Atlantic spotted dolphin	*Stenella frontalis*	Western North Atlantic	-/-, N	39,921 (0.27; 32,032; 2016)	320	0
Harbor porpoise	*Phocoena phocoena*	Gulf of Maine/Bay of Fundy	-/-, N	95,543 (0.31; 74,034; 2016)	851	217
Order Carnivora—Superfamily Pinnipedia						
Harbor seal	*Phoca vitulina*	Western North Atlantic	-/-, N	75,834 (0.15; 66,884; 2012)	2006	350
Gray seal	*Halichoerus grypus*	Western North Atlantic	-/-, N	27,131 (0.19; 23,158; 2016)	1389	4,729

1- ESA status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

2- NMFS marine mammal stock assessment reports online at: *www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*. CV is the coefficient of variation; N_{min} is the minimum estimate of stock abundance. In some cases, CV is not applicable.

3- These values, found in NMFS' SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.,* commercial fisheries, ship strike).

4- NMFS' stock abundance estimate (and associated PBR value) applies to U.S. population only. Total stock abundance (including animals in Canada) is approximately 451,431. The annual M/SI value given is for the total stock.

5- Abundance source is Pace *et al*. (2021). PBR and annual M/SI source is final 2020 SAR (Hayes *et al*. 2020). Because PBR is based on the minimum population estimate, we anticipate it will be slightly lower than what is presented here given the Pace *et al*. (2021) abundance. Regardless of final numbers, NMFS recognizes the NARW stock is critically endangered with a low PRB and high annual M/SI rate due primarily to ship strikes and entanglement

6- The draft 2022 SARs have yet to be released; however, NMFS has updated its species webpage to recognize the population estimate for NARWs is now below 350 animals (https://www.fisheries.noaa.gov/species/north-atlantic-right-whale)

As indicated above, all 15 species (with 16 managed stocks) in Table 3 temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur, and we have proposed authorizing.

The temporal and/or spatial occurrence of several cetacean and pinniped species is such that take of these species is not expected to occur either because they have very low densities in the survey area or are known to occur further offshore than the survey area. These include: Cuvier's beaked whale (*Ziphius cavirostris*), four species of Mesoplodont beaked whale (*Mesoplodon spp*.), dwarf and pygmy sperm whale (*Kogia sima and Kogia breviceps*), northern bottlenose whale (*Hyperoodon ampullatus*), killer whale (*Orcinus orca*), pygmy killer whale (*Feresa attenuata*), false killer whale (*Pseudorca crassidens*), melon-headed whale (*Peponocephala electra*), striped dolphin (*Stenella coeruleoalba*), white-beaked dolphin (*Lagenorhynchus albirostris*), pantropical spotted dolphin (*Stenella attenuata*), Fraser's dolphin (*Lagenodelphis hosei*), rough-toothed dolphin (*Steno bredanensis*), Clymene dolphin (*Stenella clymene*), spinner dolphin (*Stenella longirostris*), hooded seal (*Cystophora cristata*), and harp seal (*Pagophilus groenlandicus*). Furthermore, based on the density data presented in NEETMA's application, NMFS considers it unlikely for sei whales (*Balaenoptera borealis*) and blue whales (*Balaenoptera musculus*) to occur in the project area due to the near-zero density estimates for both cetacean species. As harassment and subsequent take

of these species is not anticipated as a result of the proposed activities, these species are not analyzed or discussed further.

In addition, the Florida manatee (*Trichechus manatus*; a sub-species of the West Indian manatee) has been previously documented as an occasional visitor the Northeast region during summer months (U.S. Fish and Wildlife Service (USFWS) 2019). However, manatees are managed by the USFWS and are not considered further in this document.

Recently, NMFS has updated its species webpage to recognize the population estimate for NARWs is now below 350 animals (*https://www.fisheries.noaa.gov/species/north-atlantic-right-whale*). We anticipate this to be more formalized in the draft 2022 SAR.

For the majority of species potentially present in the specific geographic region, NMFS has designated only a single generic stock (*e.g.*, "western North Atlantic") for management purposes. This includes the "Canadian east coast" stock of minke whales, which includes all minke whales found in U.S. waters and is also a generic stock for management purposes. For humpback whales, NMFS defines stocks on the basis of feeding locations*, i.e.,* Gulf of Maine. However, references to humpback whales in this document refer to any individuals of the species that are found in the specific geographic region. Additional information on these species can be found in Sections 3 and 4 of NEETMA's IHA application, the draft 2021 SARs (*https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*), and NMFS' website (*https://www.fisheries.noaa.gov/find-species)*.

Below is a description of the species that have the highest likelihood of occurring in the survey area and are thus expected to potentially be taken by the proposed activities as well as further detail informing the baseline for select species (*i.e.*, information regarding current Unusual Mortality Events (UMEs) and important habitat areas).

North Atlantic Right Whale

The North Atlantic right whale ranges from calving grounds in the southeastern United States to feeding grounds in New England waters and into Canadian waters (Hayes *et al*., 2018). Surveys have demonstrated the existence of seven areas where North Atlantic right whales congregate seasonally, including north and east of the proposed survey area in Georges Bank, off Cape Cod, and in Massachusetts Bay (Hayes *et al*., 2018). In the late fall months (*e.g*., October), right whales are generally thought to depart from the feeding grounds in the North Atlantic and move south to their calving grounds off Georgia and Florida. However, recent research indicates our understanding of their movement patterns remains incomplete (Davis *et al*., 2017). A review of passive acoustic monitoring data from 2004 to 2014 throughout the western North Atlantic demonstrated nearly continuous year-round right whale presence across their entire habitat range (for at least some individuals), including in locations previously thought of as migratory corridors, suggesting that not all of the population undergoes a consistent annual migration (Davis *et al*., 2017). However, given that NEETMA's surveys would be concentrated offshore New Jersey, any right whales in the vicinity of the survey areas are expected to be transient, most likely migrating through the area.

The western North Atlantic population demonstrated overall growth of 2.8 percent per year between 1990 to 2010, despite a decline in 1993 and no growth between 1997 and 2000 (Pace *et al*., 2017). However, since 2010 the population has been in decline, with a 99.99 percent probability of a decline of just under 1 percent per year (Pace *et al*., 2017). Between 1990 and 2015, calving rates varied substantially, with low calving rates coinciding with all three periods of decline or no growth (Pace *et al*., 2017). On average, North Atlantic right whale calving rates are estimated to be roughly half that of southern right whales (*Eubalaena australis*) (Pace *et al*., 2017), which are increasing in abundance (NMFS, 2015). In 2018, no new North Atlantic right whale calves were

documented in their calving grounds; this represented the first time since annual NOAA aerial surveys began in 1989 that no new right whale calves were observed. Eighteen right whale calves were documented in 2021. As of March 16, 2022 and the writing of this proposed Notice, 15 North Atlantic right whale calves have documented to have been born during this calving season. Presently, the best available population estimate for North Atlantic right whales is 368 per the draft 2021 SARs (*https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*).

The proposed survey area is part of a migratory corridor Biologically Important Area (BIA) for North Atlantic right whales (effective March-April and November-December) that extends from Massachusetts to Florida (LeBrecque *et al*., 2015). Off the coast of New Jersey, the migratory BIA extends from the coast to beyond the shelf break. This important migratory area is approximately 269,488 km^2 in size (compared with the approximately 5,183.97 km^2 of total estimated Level B harassment ensonified area associated with the 320 planned survey days) and is comprised of the waters of the continental shelf offshore the East Coast of the United States, extending from Florida through Massachusetts. NMFS' regulations at 50 CFR part 224.105 designated nearshore waters of the Mid-Atlantic Bight as Mid-Atlantic U.S. Seasonal Management Areas (SMA) for right whales in 2008. SMAs were developed to reduce the threat of collisions between ships and right whales around their migratory route and calving grounds. A portion of one SMA, which occurs off the mouth of Delaware Bay, overlaps spatially with a section of the proposed survey area. The SMA, which occurs off the mouth of Delaware Bay, is active from November 1 through April 30 of each year. Within SMAs, the regulations require a mandatory vessel speed (less than 10 kn) for all vessels greater than 65 ft. A portion of one SMA overlaps spatially with the northern section of the proposed survey area.

Elevated North Atlantic right whale mortalities have occurred since June 7, 2017, along the U.S. and Canadian coast. This event has been declared an Unusual Mortality Event (UME), with human interactions, including entanglement in fixed fishing gear and vessel strikes, implicated in at least 15 of the mortalities thus far. As of April 14, 2022, a total of 34 confirmed dead stranded whales (21 in Canada; 13 in the United States) have been documented. The cumulative total number of animals in the North Atlantic right whale UME has been updated to 49 individuals to include both the confirmed mortalities (dead stranded or floaters) (n=34) and seriously injured free-swimming whales (n=15) to better reflect the confirmed number of whales likely removed from the population during the UME and more accurately reflect the population impacts. More information is available online at: *www.fisheries.noaa.gov/national/marine-life-distress/2017-2021-north-atlantic-right-whale-unusual-mortality-event*.

Right Whale Slow Zones are areas where mariners are encouraged to avoid areas and/or reduce speeds to 10 kn to avoid vessel collisions with North Atlantic right whales. Slow Zones typically persist for 15 days. More information on these right whale Slow Zones can be found on NMFS' website (*https://www.fisheries.noaa.gov/national/endangered-species-conservation/reducing-vessel-strikes-north-atlantic-right-whales*).

Humpback Whale

Humpback whales are found worldwide in all oceans. Humpback whales were listed as endangered under the Endangered Species Conservation Act (ESCA) in June 1970. In 1973, the ESA replaced the ESCA, and humpbacks continued to be listed as endangered. On September 8, 2016, NMFS divided the species into 14 distinct population segments (DPS), removed the current species-level listing, and in its place listed four DPSs as endangered and one DPS as threatened (81 FR 62259; September 8, 2016). The remaining nine DPSs were not listed. The West Indies DPS, which is not listed under the

ESA, is the only DPS of humpback whale that is expected to occur in the survey area. Whales occurring in the survey area are not necessarily from the Gulf of Maine feeding population managed as a stock by NMFS. Barco *et al*. (2002) estimated that, based on photo-identification, only 39 percent of individual humpback whales observed along the mid- and south Atlantic U.S. coast are from the Gulf of Maine stock. Bettridge *et al*. (2015) estimated the size of the West Indies DPS population at 12,312 (95 percent CI 8,688-15,954) whales in 2004-05, which is consistent with previous population estimates of approximately 10,000-11,000 whales (Stevick *et al*., 2003; Smith *et al*., 1999) and the increasing trend for the West Indies DPS (Bettridge *et al*., 2015).

Humpback whales utilize the mid-Atlantic as a migration pathway between calving/mating grounds to the south and feeding grounds in the north (Waring *et al*., 2007a; Waring *et al*., 2007b). Barco *et al*. (2002) suggested that the mid-Atlantic region primarily represents a supplemental winter-feeding ground used by humpbacks. Recent research by King *et al.* (2021) has demonstrated a higher occurrence and use (foraging) of the New York Bight area by humpback whales than previously known.

Three previous UMEs involving humpback whales have occurred since 2000, in 2003, 2005, and 2006. Since January 2016, elevated humpback whale mortalities have occurred along the Atlantic coast from Maine to Florida. Partial or full necropsy examinations have been conducted on approximately half of the 158 known cases (as of April 14, 2022). Of the whales examined, about 50 percent had evidence of human interaction, either ship strike or entanglement. While a portion of the whales have shown evidence of pre-mortem vessel strike, this finding is not consistent across all whales examined and more research is needed. NOAA is consulting with researchers that are conducting studies on the humpback whale populations, and these efforts may provide information on changes in whale distribution and habitat use that could provide additional insight into how these vessel interactions occurred. More information is available at:

www.fisheries.noaa.gov/national/marine-life-distress/2016-2021-humpback-whale-unusual-mortality-event-along-atlantic-coast.

Fin Whale

Fin whales are common in waters of the U. S. Atlantic Exclusive Economic Zone (EEZ), principally from Cape Hatteras northward (Waring *et al*., 2016). Fin whales are present north of 35-degree latitude in every season and are broadly distributed throughout the western North Atlantic for most of the year (Waring *et al*., 2016). They are typically found in small groups of up to five individuals (Brueggeman *et al*., 1987). The main threats to fin whales are fishery interactions and vessel collisions (Waring *et al*., 2016).

Minke Whale

Minke whales can be found in temperate, tropical, and high-latitude waters. The Canadian East Coast stock can be found in the area from the western half of the Davis Strait (45°W) to the Gulf of Mexico (Waring *et al*., 2016). This species generally occupies waters less than 100-m deep on the continental shelf. There appears to be a strong seasonal component to minke whale distribution in the survey areas, in which spring to fall are times of relatively widespread and common occurrence while during winter the species appears to be largely absent (Waring *et al*., 2016).

Since January 2017, elevated minke whale mortalities have occurred along the Atlantic coast from Maine through South Carolina, with a total of 122 strandings (as of April 14, 2022). This event has been declared a UME. Full or partial necropsy examinations were conducted on more than 60 percent of the whales. Preliminary findings in several of the whales have shown evidence of human interactions or infectious disease, but these findings are not consistent across all of the whales examined, so more research is needed. More information is available at: *www.fisheries.noaa.gov/national/marine-life-distress/2017-2021-minke-whale-unusual-mortality-event-along-atlantic-coast*.

Sperm Whale

The distribution of the sperm whale in the U.S. EEZ occurs on the continental shelf edge, over the continental slope, and into mid-ocean regions (Waring *et al*., 2014). The basic social unit of the sperm whale appears to be the mixed school of adult females plus their calves and some juveniles of both sexes, normally numbering 20-40 animals in all. There is evidence that some social bonds persist for many years (Christal *et al*., 1998). This species forms stable social groups, site fidelity, and latitudinal range limitations in groups of females and juveniles (Whitehead, 2002). In summer, the distribution of sperm whales includes the area east and north of Georges Bank and into the Northeast Channel region, as well as the continental shelf (inshore of the 100-m isobath) south of New England. In the fall, sperm whale occurrence south of New England on the continental shelf is at its highest level, and there remains a continental shelf edge occurrence in the mid-Atlantic bight. In winter, sperm whales are concentrated east and northeast of Cape Hatteras.

Long-finned Pilot Whale

Long-finned pilot whales are found from North Carolina to Iceland, Greenland and the Barents Sea (Hayes *et al*., 2021). In the U.S. Atlantic waters the species is distributed principally along the continental shelf edge off the northeastern U.S. coast in winter and early spring and in late spring, pilot whales move onto Georges Bank and into the Gulf of Maine northward, and remain in these areas through late fall (Hayes *et al*., 2021). Long-finned and short-finned pilot whales overlap spatially along the mid-Atlantic shelf break between Delaware and the southern flank of Georges Bank. Long-finned pilot whales have occasionally been observed stranded as far south as South Carolina, but sightings of long-finned pilot whales south of Cape Hatteras would be considered unusual (Hayes *et al*., 2021). The main threats to this species include interactions with fisheries and habitat issues including exposure to high levels of polychlorinated biphenyls and

chlorinated pesticides, and toxic metals including mercury, lead, and cadmium, and selenium (Hayes *et al*., 2021).

Short-Finned Pilot Whale

As described above, long-finned and short-finned pilot whales overlap spatially with the survey area and along the mid-Atlantic shelf. There is limited information on the distribution of short-finned pilot whales. They prefer warmer tropical waters and deeper waters offshore, and in the northeastern United States they are often sighted near the Gulf Stream (Hayes *et al*., 2021). Short-finned pilot whales have occasionally been observed stranded as far north as Massachusetts but north of ~42°N short-finned pilot whale sightings would be considered unusual while south of Cape Hatteras most pilot whales would expected to be short-finned pilot whales (Hayes *et al*., 2021). As with long-finned pilot whales, the main threats to this species include interactions with fisheries and habitat issues including exposure to high levels of polychlorinated biphenyls and chlorinated pesticides, and toxic metals including mercury, lead, cadmium, and selenium (Hayes *et al*., 2021).

Atlantic White-sided Dolphin

White-sided dolphins are found in temperate and sub-polar waters of the North Atlantic, primarily in continental shelf waters to the 100m depth contour from central West Greenland to North Carolina (Waring *et al*., 2016). The Gulf of Maine stock is most common in continental shelf waters from Hudson Canyon to Georges Bank, and in the Gulf of Maine and lower Bay of Fundy. Sighting data indicate seasonal shifts in distribution (Northridge *et al*., 1997). During January to May, low numbers of white-sided dolphins are found from Georges Bank to Jeffreys Ledge (off New Hampshire), with even lower numbers south of Georges Bank, as documented by a few strandings collected on beaches of Virginia to South Carolina. From June through September, large numbers of white-sided dolphins are found from Georges Bank to the lower Bay of

Fundy. From October to December, white-sided dolphins occur at intermediate densities from southern Georges Bank to southern Gulf of Maine (Payne and Heinemann, 1990). Sightings south of Georges Bank, particularly around Hudson Canyon, occur year round but at low densities.

Atlantic Spotted Dolphin

Atlantic spotted dolphins are found in tropical and warm temperate waters ranging from southern New England, south to Gulf of Mexico and the Caribbean to Venezuela (Waring *et al*., 2014). This stock regularly occurs in continental shelf waters south of Cape Hatteras and in continental shelf edge and continental slope waters north of this region (Waring *et al*., 2014). There are two forms of this species, with the larger ecotype inhabiting the continental shelf and is usually found inside or near the 200-m isobaths (Waring *et al*., 2014).

Common Dolphin

The common dolphin is found worldwide in temperate to subtropical seas. In the North Atlantic, common dolphins are commonly found over the continental shelf between the 100-m and 2,000-m isobaths and over prominent underwater topography and east to the mid-Atlantic Ridge (Waring *et al*., 2016).

Bottlenose Dolphin

There are two distinct bottlenose dolphin morphotypes in the western North Atlantic: The coastal and offshore forms (Waring *et al*., 2016). The offshore form is distributed primarily along the outer continental shelf and continental slope in the Northwest Atlantic Ocean from Georges Bank to the Florida Keys. The coastal morphotype is morphologically and genetically distinct from the larger, more robust morphotype that occupies habitats further offshore. Spatial distribution data, tag-telemetry studies, photo-ID studies and genetic studies demonstrate the existence of a distinct Northern Migratory stock of coastal bottlenose dolphins (Waring *et al*., 2014).

During summer months (July-August), this stock occupies coastal waters from the shoreline to approximately the 25-m isobath between the Chesapeake Bay mouth and Long Island, New York; during winter months (January-March), the stock occupies coastal waters from Cape Lookout, North Carolina, to the North Carolina/Virginia border (Waring *et al*., 2014). The Western North Atlantic northern migratory coastal stock and the Western North Atlantic offshore stock may be encountered by the proposed survey.

Harbor Porpoise

In the Lease Area, only the Gulf of Maine/Bay of Fundy stock may be present. This stock is found in U.S. and Canadian Atlantic waters and is concentrated in the northern Gulf of Maine and southern Bay of Fundy region, generally in waters less than 150-m deep (Waring *et al*., 2016). They are seen from the coastline to deep waters (>1,800-m; Westgate *et al*., 1998), although the majority of the population is found over the continental shelf (Waring *et al*., 2016). The main threat to the species is interactions with fisheries, with documented take in the U.S. northeast sink gillnet, mid-Atlantic gillnet, and northeast bottom trawl fisheries and in the Canadian herring weir fisheries (Waring *et al*., 2016).

Pinninpeds (Harbor Seal and Gray Seal)

The harbor seal is found in all nearshore waters of the North Atlantic and North Pacific Oceans and adjoining seas above about 30°N (Burns, 2009). In the western North Atlantic, harbor seals are distributed from the eastern Canadian Arctic and Greenland south to southern New England and New York, and occasionally to the Carolinas (Waring *et al*., 2016). Haul-out and pupping sites are located off Manomet, MA and the Isles of Shoals, ME, but generally do not occur in areas in southern New England (Waring *et al*., 2016).

There are three major populations of gray seals found in the world; eastern Canada (western North Atlantic stock), northwestern Europe and the Baltic Sea. Gray

seals in the survey area belong to the western North Atlantic stock. The range for this stock is thought to be from New Jersey to Labrador. Current population trends show that gray seal abundance is likely increasing in the U.S. Atlantic EEZ (Waring *et al*., 2016). Although the rate of increase is unknown, surveys conducted since their arrival in the 1980s indicate a steady increase in abundance in both Maine and Massachusetts (Waring *et al*., 2016). It is believed that recolonization by Canadian gray seals is the source of the U.S. population (Waring *et al*., 2016).

Since July 2018, elevated numbers of harbor seal and gray seal mortalities have occurred across Maine, New Hampshire and Massachusetts. This event has been declared a UME. Additionally, stranded seals have shown clinical signs as far south as Virginia, although not in elevated numbers, therefore the UME investigation now encompasses all seal strandings from Maine to Virginia. Ice seals (harp and hooded seals) have also started stranding with clinical signs, again not in elevated numbers, and those two seal species have also been added to the UME investigation. A total of 3,152 reported strandings (of all species) had occurred from July 1, 2018, through March 13, 2020. Full or partial necropsy examinations have been conducted on some of the seals and samples have been collected for testing. Based on tests conducted thus far, the main pathogen found in the seals is phocine distemper virus. NMFS is performing additional testing to identify any other factors that may be involved in this UME. Presently, this UME is non-active and is pending closure by NMFS as of March 2020. Information on this UME is available online at: *www.fisheries.noaa.gov/new-england-mid-atlantic/marine-life-distress/2018-2020-pinniped-unusual-mortality-event-along*.

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the

frequency ranges marine mammals are able to hear. Current data indicate that not all marine mammal species have equal hearing capabilities (*e.g.*, Richardson *et al.*, 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007) recommended that marine mammals be divided into functional hearing groups based on directly measured or estimated hearing ranges on the basis of available behavioral response data, audiograms derived using auditory evoked potential techniques, anatomical modeling, and other data. Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.*, low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 decibel (dB) threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 4.

Table 4. Marine Mammal Hearing Groups (NMFS, 2018)

Hearing Group	Generalized Hearing Range[1]
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
High-frequency (HF) cetaceans (true porpoises, *Kogia*, river dolphins, cephalorhynchid, *Lagenorhynchus cruciger* & *L. australis*)	275 Hz to 160 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz

1-Represents the generalized hearing range for the entire group as a composite (*i.e.,* all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall *et al.* 2007) and PW pinniped (approximation).

The pinniped functional hearing group was modified from Southall *et al*. (2007) on the basis of data indicating that phocid species have consistently demonstrated an extended frequency range of hearing compared to otariids, especially in the higher frequency range (Hemilä *et al*., 2006; Kastelein *et al*., 2009; Reichmuth and Holt, 2013).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information. Fifteen marine mammal species (thirteen cetacean and two pinniped (both phocid) species) have the reasonable potential to co-occur with the proposed survey activities. Please refer back to Table 3. Of the cetacean species that may be present, four are classified as low-frequency cetaceans (*i.e*., all mysticete species), eight are classified as mid-frequency cetaceans (*i.e*., all delphinid and the sperm whale), and one is classified as a high-frequency cetaceans (*i.e*., harbor porpoise).

Potential Effects of Specified Activities on Marine Mammals and their Habitat

This section includes a summary and discussion of the ways that components of the specified activity may impact marine mammals and their habitat. Detailed descriptions of the potential effects of similar specified activities have been provided in other recent and related **Federal Register** notices, including for survey activities using similar HRG methodologies, over similar amounts of time, and occurring within the Mid-Atlantic region, including waters off New Jersey (*e.g.*, 82 FR 20563, May 3, 2017; 85 FR 7926, February 12, 2020; 85 FR 37848, June 24, 2020; 86 FR 16327, March 29, 2021; and 87 FR 14823, March 16, 2022). No significant new information is available, and we refer the reader to these documents rather than repeating the details here.

The **Estimated Take** section later in this document includes a quantitative analysis of the number of individuals that are expected to be taken by this activity. The **Negligible Impact Analysis and Determination** section considers the potential effects of the specified activity, the **Estimated Take** section, and the **Proposed Mitigation**

section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and how those impacts on individuals are likely to impact marine mammal species or stocks.

Background on Active Acoustic Sound Sources and Acoustic Terminology

This subsection contains a brief technical background on sound, on the characteristics of certain sound types, and on metrics used in this proposal inasmuch as the information is relevant to the specified activity and to the summary of the potential effects of the specified activity on marine mammals. For general information on sound and its interaction with the marine environment, please see, *e.g.*, Au and Hastings (2008); Richardson *et al*. (1995); Urick (1983).

Sound travels in waves, the basic components of which are frequency, wavelength, velocity, and amplitude. Frequency is the number of pressure waves that pass by a reference point per unit of time and is measured in hertz or cycles per second. Wavelength is the distance between two peaks or corresponding points of a sound wave (length of one cycle). Higher frequency sounds have shorter wavelengths than lower frequency sounds, and typically attenuate (decrease) more rapidly, except in certain cases in shallower water. Amplitude is the height of the sound pressure wave or the "loudness" of a sound and is typically described using the relative unit of the decibel. A sound pressure level (SPL) in dB is described as the ratio between a measured pressure and a reference pressure (for underwater sound, this is 1 microPascal (μPa)), and is a logarithmic unit that accounts for large variations in amplitude. Therefore, a relatively small change in dB corresponds to large changes in sound pressure. The source level (SL) represents the SPL referenced at a distance of 1-m from the source (referenced to 1 μPa), while the received level is the SPL at the listener's position (referenced to 1 μPa).

Root mean square (rms) is the quadratic mean sound pressure over the duration of an impulse. Root mean square is calculated by squaring all of the sound amplitudes,

averaging the squares, and then taking the square root of the average (Urick, 1983). Root mean square accounts for both positive and negative values; squaring the pressures makes all values positive so that they may be accounted for in the summation of pressure levels (Hastings and Popper, 2005). This measurement is often used in the context of discussing behavioral effects, in part because behavioral effects, which often result from auditory cues, may be better expressed through averaged units than by peak pressures.

Sound exposure level (SEL; represented as dB re 1 μPa^2-s) represents the total energy in a stated frequency band over a stated time interval or event and considers both intensity and duration of exposure. The per-pulse SEL is calculated over the time window containing the entire pulse (*i.e.*, 100 percent of the acoustic energy). SEL is a cumulative metric; it can be accumulated over a single pulse, or calculated over periods containing multiple pulses. Cumulative SEL represents the total energy accumulated by a receiver over a defined time window or during an event. Peak sound pressure (also referred to as zero-to-peak sound pressure or 0-pk) is the maximum instantaneous sound pressure measurable in the water at a specified distance from the source and is represented in the same units as the rms sound pressure.

When underwater objects vibrate or activity occurs, sound-pressure waves are created. These waves alternately compress and decompress the water as the sound wave travels. Underwater sound waves radiate in a manner similar to ripples on the surface of a pond and may be directed either in a beam or in beams or may radiate in all directions (omnidirectional sources). The compressions and decompressions associated with sound waves are detected as changes in pressure by aquatic life and man-made sound receptors such as hydrophones.

Even in the absence of sound from the specified activity, the underwater environment is typically loud due to ambient sound, which is defined as environmental background sound levels lacking a single source or point (Richardson *et al*., 1995). The

sound level of a region is defined by the total acoustical energy being generated by known and unknown sources. These sources may include physical (*e.g.*, wind and waves, earthquakes, ice, atmospheric sound), biological (*e.g.*, sounds produced by marine mammals, fish, and invertebrates), and anthropogenic (*e.g.*, vessels, dredging, construction) sound. A number of sources contribute to ambient sound, including wind and waves, which are a main source of naturally occurring ambient sound for frequencies between 200 Hz and 50 kHz (Mitson, 1995). In general, ambient sound levels tend to increase with increasing wind speed and wave height. Precipitation can become an important component of total sound at frequencies above 500 Hz, and possibly down to 100 Hz during quiet times. Marine mammals can contribute significantly to ambient sound levels, as can some fish and snapping shrimp. The frequency band for biological contributions is from approximately 12 Hz to over 100 kHz. Sources of ambient sound related to human activity include transportation (surface vessels), dredging and construction, oil and gas drilling and production, geophysical surveys, sonar, and explosions. Vessel noise typically dominates the total ambient sound for frequencies between 20 and 300 Hz. In general, the frequencies of anthropogenic sounds are below 1 kHz and, if higher frequency sound levels are created, they attenuate rapidly.

The sum of the various natural and anthropogenic sound sources that comprise ambient sound at any given location and time depends not only on the source levels (as determined by current weather conditions and levels of biological and human activity) but on the ability of sound to propagate through the environment. In turn, sound propagation is dependent on the spatially and temporally varying properties of the water column and sea floor, and is frequency-dependent. As a result of the dependence on a large number of varying factors, ambient sound levels can be expected to vary widely over both coarse and fine spatial and temporal scales. Sound levels at a given frequency and location can vary by 10-20 dB from day to day (Richardson *et al*., 1995). The result

is that, depending on the source type and its intensity, sound from the specified activity may be a negligible addition to the local environment or could form a distinctive signal that may affect marine mammals. Details of source types are described in the following text.

Sounds are often considered to fall into one of two general types: pulsed and non-pulsed (defined in the following). The distinction between these two sound types is important because they have differing potential to cause physical effects, particularly with regard to hearing (*e.g.*, Ward, 1997 in Southall *et al*., 2007). Please see Southall *et al*. (2007) for an in-depth discussion of these concepts. The distinction between these two sound types is not always obvious, as certain signals share properties of both pulsed and non-pulsed sounds. A signal near a source could be categorized as a pulse, but due to propagation effects as it moves farther from the source, the signal duration becomes longer (*e.g.*, Greene and Richardson, 1988).

Pulsed sound sources (*e.g.*, airguns, explosions, gunshots, sonic booms, impact pile driving) produce signals that are brief (typically considered to be less than one second), broadband, atonal transients (ANSI, 1986, 2005; Harris, 1998; NIOSH, 1998) and occur either as isolated events or repeated in some succession. Pulsed sounds are all characterized by a relatively rapid rise from ambient pressure to a maximal pressure value followed by a rapid decay period that may include a period of diminishing, oscillating maximal and minimal pressures, and generally have an increased capacity to induce physical injury as compared with sounds that lack these features.

Non-pulsed sounds can be tonal, narrowband, or broadband, brief or prolonged, and may be either continuous or intermittent (ANSI, 1995; NIOSH, 1998). Some of these non-pulsed sounds can be transient signals of short duration but without the essential properties of pulses (*e.g.*, rapid rise time). Examples of non-pulsed sounds include those produced by vessels, aircraft, machinery operations such as drilling or dredging, vibratory

pile driving, and active sonar systems. The duration of such sounds, as received at a distance, can be greatly extended in a highly reverberant environment.

Sparkers and boomers produce pulsed signals with energy in the frequency ranges specified in Table 2. The amplitude of the acoustic wave emitted from sparker sources is equal in all directions (*i.e.*, omnidirectional), while other sources planned for use during the proposed surveys have some degree of directionality to the beam, as specified in Table 2. Other sources planned for use during the proposed survey activity (*e.g.*, CHIRP SBPs) should be considered non-pulsed, intermittent sources.

Summary on Specific Potential Effects of Acoustic Sound Sources

Underwater sound from active acoustic sources can include one or more of the following: temporary or permanent hearing impairment, behavioral disturbance, masking, stress, and non-auditory physical effects. The degree of effect is intrinsically related to the signal characteristics, received level, distance from the source, and duration of the sound exposure. Marine mammals exposed to high-intensity sound, or to lower-intensity sound for prolonged periods, can experience hearing threshold shift (TS), which is the loss of hearing sensitivity at certain frequency ranges (Finneran, 2015). TS can be permanent (PTS; permanent threshold shift), in which case the loss of hearing sensitivity is not fully recoverable, or temporary (TTS; temporary threshold shift), in which case the animal's hearing threshold would recover over time (Southall *et al*., 2007).

Animals in the vicinity of NEETMA's proposed HRG survey activity are unlikely to incur even TTS due to the characteristics of the sound sources, which include relatively low source levels (176 to 205 dB re 1 µPa m), and generally very short pulses and potential duration of exposure. These characteristics mean that instantaneous exposure is unlikely to cause TTS, as it is unlikely that exposure would occur close enough to the vessel for received levels to exceed peak pressure TTS criteria, and that the cumulative duration of exposure would be insufficient to exceed cumulative sound

exposure level (SEL) criteria. Even for high-frequency cetacean species (*e.g.*, harbor porpoises), which have the greatest sensitivity to potential TTS, individuals would have to make a very close approach and also remain very close to vessels operating these sources in order to receive multiple exposures at relatively high levels, as would be necessary to cause TTS. Intermittent exposures—as would occur due to the brief, transient signals produced by these sources—require a higher cumulative SEL to induce TTS than would continuous exposures of the same duration (*i.e.*, intermittent exposure results in lower levels of TTS). Moreover, most marine mammals would more likely avoid a loud sound source rather than swim in such close proximity as to result in TTS. Kremser *et al.* (2005) noted that the probability of a cetacean swimming through the area of exposure when a sub-bottom profiler emits a pulse is small—because if the animal was in the area, it would have to pass the transducer at close range in order to be subjected to sound levels that could cause TTS and would likely exhibit avoidance behavior to the area near the transducer rather than swim through at such a close range. Further, the restricted beam shape of many of HRG survey devices planned for use (Table 2) makes it unlikely that an animal would be exposed more than briefly during the passage of the vessel.

Behavioral disturbance may include a variety of effects, including subtle changes in behavior (*e.g.*, minor or brief avoidance of an area or changes in vocalizations), more conspicuous changes in similar behavioral activities, and more sustained and/or potentially severe reactions, such as displacement from or abandonment of high-quality habitat. Behavioral responses to sound are highly variable and context-specific and any reactions depend on numerous intrinsic and extrinsic factors (*e.g.*, species, state of maturity, experience, current activity, reproductive state, auditory sensitivity, time of day), as well as the interplay between factors. Available studies show wide variation in

response to underwater sound; therefore, it is difficult to predict specifically how any given sound in a particular instance might affect marine mammals perceiving the signal.

In addition, sound can disrupt behavior through masking, or interfering with, an animal's ability to detect, recognize, or discriminate between acoustic signals of interest (*e.g.*, those used for intraspecific communication and social interactions, prey detection, predator avoidance, navigation). Masking occurs when the receipt of a sound is interfered with by another coincident sound at similar frequencies and at similar or higher intensity, and may occur whether the sound is natural (*e.g.*, snapping shrimp, wind, waves, precipitation) or anthropogenic (*e.g.*, shipping, sonar, seismic exploration) in origin. Marine mammal communications would not likely be masked appreciably by the acoustic signals given the directionality of the signals for most HRG survey equipment types planned for use (Table 2) and the brief period when an individual mammal is likely to be exposed.

Classic stress responses begin when an animal's central nervous system perceives a potential threat to its homeostasis. That perception triggers stress responses regardless of whether a stimulus actually threatens the animal; the mere perception of a threat is sufficient to trigger a stress response (Moberg 2000; Seyle 1950). Once an animal's central nervous system perceives a threat, it mounts a biological response or defense that consists of a combination of the four general biological defense responses: behavioral responses, autonomic nervous system responses, neuroendocrine responses, or immune responses. In the case of many stressors, an animal's first and sometimes most economical (in terms of biotic costs) response is behavioral avoidance of the potential stressor or avoidance of continued exposure to a stressor. An animal's second line of defense to stressors involves the sympathetic part of the autonomic nervous system and the classical "fight or flight" response which includes the cardiovascular system, the gastrointestinal system, the exocrine glands, and the adrenal medulla to produce changes in heart rate,

blood pressure, and gastrointestinal activity that humans commonly associate with "stress." These responses have a relatively short duration and may or may not have significant long-term effect on an animal's welfare. An animal's third line of defense to stressors involves its neuroendocrine systems; the system that has received the most study has been the hypothalamus-pituitary-adrenal system (also known as the HPA axis in mammals). Unlike stress responses associated with the autonomic nervous system, virtually all neuro-endocrine functions that are affected by stress—including immune competence, reproduction, metabolism, and behavior—are regulated by pituitary hormones. Stress-induced changes in the secretion of pituitary hormones have been implicated in failed reproduction (Moberg 1987; Rivier 1995), reduced immune competence (Blecha 2000), and behavioral disturbance. Increases in the circulation of glucocorticosteroids (cortisol, corticosterone, and aldosterone in marine mammals; see Romano *et al*., 2004) have been long been equated with stress. The primary distinction between stress (which is adaptive and does not normally place an animal at risk) and distress is the biotic cost of the response. In general, there are few data on the potential for strong, anthropogenic underwater sounds to cause non-auditory physical effects in marine mammals. The available data do not allow identification of a specific exposure level above which non-auditory effects can be expected (Southall *et al*., 2007). There is currently no definitive evidence that any of these effects occur even for marine mammals in close proximity to an anthropogenic sound source. In addition, marine mammals that show behavioral avoidance of survey vessels and related sound sources are unlikely to incur non-auditory impairment or other physical effects. NMFS does not expect that the generally short-term, intermittent, and transitory HRG and geotechnical survey activities would create conditions of long-term, continuous noise and chronic acoustic exposure leading to long-term physiological stress responses in marine mammals.

Sound may affect marine mammals through impacts on the abundance, behavior, or distribution of prey species (*e.g.*, crustaceans, cephalopods, fish, and zooplankton) (*i.e.*, effects to marine mammal habitat). Prey species exposed to sound might move away from the sound source, experience TTS, experience masking of biologically relevant sounds, or show no obvious direct effects. The most likely impacts (if any) for most prey species in a given area would be temporary avoidance of the area. Surveys using active acoustic sound sources move through an area, limiting exposure to multiple pulses. In all cases, sound levels would return to ambient once a survey ends and the noise source is shut down and, when exposure to sound ends, behavioral and/or physiological responses are expected to end relatively quickly. Finally, the HRG survey equipment will not have significant impacts to the seafloor and does not represent a source of pollution.

Vessel Strike

Vessel collisions with marine mammals, or ship strikes, can result in death or serious injury of the animal. These interactions are typically associated with large whales, which are less maneuverable than are smaller cetaceans or pinnipeds in relation to large vessels. Ship strikes generally involve commercial shipping vessels, which are generally larger and of which there is much more traffic in the ocean than geophysical survey vessels. Jensen and Silber (2004) summarized ship strikes of large whales worldwide from 1975-2003 and found that most collisions occurred in the open ocean and involved large vessels (*e.g.*, commercial shipping). For vessels used in geophysical survey activities, vessel speed while towing gear is typically only 4-5 knots. At these speeds, both the possibility of striking a marine mammal and the possibility of a strike resulting in serious injury or mortality are so low as to be discountable. At average transit speed for geophysical survey vessels, the probability of serious injury or mortality resulting from a strike is less than 50 percent. However, the likelihood of a strike actually happening is again low given the smaller size of these vessels and generally slower

speeds. Notably in the Jensen and Silber study, no strike incidents were reported for geophysical survey vessels during that time period.

The potential effects of NEETMA's specified survey activity are expected to be limited to Level B behavioral harassment. No permanent or temporary auditory effects, or significant impacts to marine mammal habitat, including prey, are expected.

Marine Mammal Habitat

The HRG survey equipment will not contact the seafloor and does not represent a source of pollution. As the HRG survey equipment introduces noise to the marine environment, there is the potential for it to result in avoidance of the area around the HRG survey activities on the part of marine mammal prey. Any avoidance of the area on the part of marine mammal prey would be expected to be short term and temporary.

Because of the temporary nature of the disturbance, and the availability of similar habitat and resources (*e.g.*, prey species) in the surrounding area, the impacts to marine mammals and the food sources that they utilize are not expected to cause significant or long-term consequences for individual marine mammals or their populations. Impacts on marine mammal habitat from the proposed activities will be temporary, insignificant, and discountable.

Estimated Take

This section provides an estimate of the number of incidental takes proposed for authorization through this IHA, which will inform both NMFS' consideration of "small numbers" and the negligible impact determination.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines "harassment" as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal

stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes would be by Level B harassment only, in the form of disruption of behavioral patterns for individual marine mammals resulting from exposure to noise from certain HRG acoustic sources. Based primarily on the characteristics of the signals produced by the acoustic sources planned for use, Level A harassment is neither anticipated (even absent mitigation), nor proposed to be authorized. Consideration of the anticipated effectiveness of the measures (*i.e.,* exclusion zones and shutdown measures), discussed in detail below in the **Proposed Mitigation** section, further strengthens the conclusion that Level A harassment is not a reasonably anticipated outcome of the survey activity. As described previously, no serious injury or mortality is anticipated or proposed to be authorized for this activity. Below we describe how the take is estimated.

Generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) the number of days of activities. We note that while these basic factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.,* previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the proposed take estimate.

Acoustic Thresholds

NMFS uses acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be

behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment).

Level B Harassment – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g*., frequency, predictability, duty cycle), the environment (*e.g.,* bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al*., 2007; Ellison *et al*., 2012). NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals may be behaviorally harassed (*i.e*., Level B harassment) when exposed to underwater anthropogenic noise above received levels of 160 dB re 1 µPa (rms) for the impulsive sources (*i.e*., boomers, sparkers) and non-impulsive, intermittent sources (*e.g*., CHIRP SBPs) evaluated here for NEETMA's proposed activity.

Level A Harassment – NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). For more information, see NMFS' 2018 Technical Guidance, which may be accessed at *www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance*.

NEETMA's proposed activity includes the use of impulsive (*i.e.,* sparkers and boomers) and non-impulsive, intermittent (*e.g*., CHIRP SBP) sources. These can be found in Table 2.

Ensonified Area

Here, we describe operational and environmental parameters of the activity that will feed into identifying the area ensonified above the acoustic thresholds, which include source levels and transmission loss coefficient.

NMFS has developed a user-friendly methodology for estimating the extent of the Level B harassment isopleths associated with relevant HRG survey equipment (NMFS, 2020). This methodology incorporates frequency and directionality to refine estimated ensonified zones. For acoustic sources that operate with different beamwidths, the maximum beamwidth was used, and the lowest frequency of the source was used when calculating the frequency-dependent absorption coefficient.

NMFS considers the data provided by Crocker and Fratantonio (2016) to represent the best available information on source levels associated with HRG equipment and, therefore, recommends that source levels provided by Crocker and Fratantonio (2016) be incorporated in the method described above to estimate isopleth distances to harassment thresholds. In cases when the source level for a specific type of HRG equipment is not provided in Crocker and Fratantonio (2016), NMFS recommends that either the source levels provided by the manufacturer be used, or, in instances where source levels provided by the manufacturer are unavailable or unreliable, a proxy from Crocker and Fratantonio (2016) be used instead. Table 2 shows the HRG equipment types that may be used during the proposed surveys and the source levels associated with those HRG equipment types.

Results of modeling using the methodology described above indicated that, of the HRG survey equipment planned for use by NEETMA that has the potential to result in Level B harassment of marine mammals, the Applied Acoustics Dura-Spark UHD and GeoMarine Geo-Source sparkers would produce the largest Level B harassment isopleth (141 m). Estimated Level B harassment isopleths for all sources evaluated here, including the sparkers, are provided in Table 5. Although NEETMA does not expect to use sparker

sources on all planned survey days, it proposes to assume for purposes of analysis that the sparker would be used on all survey days. This is a conservative approach, as the actual sources used on individual survey days may produce smaller harassment distances.

Table 5. Distances to Level B Harassment Threshold (160 dB rms)

Equipment Category	HRG Equipment	Distance to Level B harassment threshold in meters (m)
Shallow SBPs	ET 216 CHIRP	9
	ET 424 CHIRP	4
	GeoPulse 5430	21
	TB CHIRP III	48
Medium SBPs	AA, triple plate S-Boom (700-1,000 J)	34
	AA, Dura-spark UHD (500 J/400 tip	141
	AA, Dura-spark UHD 400+400	141
	GeoMarine Geo Spark 2000 (400 tip)	141

Marine Mammal Occurrence

In this section we provide the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations.

Habitat-based density models produced by the Duke University Marine Geospatial Ecology Laboratory and the Marine-life Data and Analysis Team, based on the best available marine mammal data from 1992-201 obtained in a collaboration between Duke University, the Northeast Regional Planning Body, the University of North Carolina Wilmington, the Virginia Aquarium and Marine Science Center, and NOAA (Roberts *et al*., 2016a; Curtice *et al*., 2018), represent the best available information regarding marine mammal densities in the survey area. More recently, these data have been updated with new modeling results and include density estimates for pinnipeds (Roberts *et al*., 2016b, 2017, 2018).

The density data presented by Roberts *et al*. (2016b, 2017, 2018, 2020) incorporates aerial and shipboard line-transect survey data from NMFS and other organizations and incorporates data from eight physiographic and 16 dynamic oceanographic and biological covariates, and controls for the influence of sea state, group size, availability bias, and perception bias on the probability of making a sighting. These density models were originally developed for all cetacean taxa in the U.S. Atlantic (Roberts *et al*., 2016a). In subsequent years, certain models have been updated based on additional data as well as certain methodological improvements. More information is available online at *https://seamap.env.duke.edu/models/Duke/EC/.* Marine mammal density estimates in the survey area (animals/km^2) were obtained using the most recent model results for all taxa (Roberts *et al*., 2016b, 2017, 2018, 2020). The updated models incorporate additional sighting data, including sightings from NOAA's Atlantic Marine Assessment Program for Protected Species (AMAPPS) surveys.

For the exposure analysis, marine mammal density data from Roberts *et al*. (2016a; 2016b; 2017; 2018; 2020; 2021a; 2021b) were mapped for the survey area using a geographic information system (GIS). NEETMA used all 10 x 10 km (6.2 x 6.2 mile) grid cells (5 x 5 km (3.1 x 3.1 mile) for the North Atlantic right whale) where the centroid was within each survey area in developing estimated density values for each species. For data in which the Roberts *et al.* data does not provide outputs at the species level (*i.e.*, pilot whale *spp*. and pinnipeds) the single annual density was used. For all other species, the monthly densities were used to yield the average annual density. Bottlenose dolphin density estimates were also divided based on the specified stock.

In the Roberts *et al*. (2016b, 2017, 2018) models, species-specific delineations were not made for some marine mammals, including some pinniped species' (harbor seal and gray seal) and for pilot whale *spp.* (long-finned and short-finned). For pilot whales, both species are known to share similar habitat in the project area, feed on similar prey,

and have overlapping distributions (Mintzer *et al*., 2008; Rone and Pace, 2012). Hayes *et al*. (2017) noted a particular overlap between the two species between New Jersey and George's Bank. Furthermore, due to their similar appearances at sea and difficulty in distinguishing species-specific characteristics, observers are likely to combine sightings of pilot whales (Waring, 1993; Rone and Pace, 2012; Stepanuk *et al*., 2018).

Regarding the pinniped species, because the seasonality, feeding preferences, and habitat use by gray seals often overlaps with that of harbor seals in the survey areas, it was assumed that modeled takes of seals could occur to either of the respective species.

As discussed in the application, the single annual density for each marine mammal group (pilot whale *spp.* and pinnipeds) was applied and the results were divided between each species, resulting in an equal split.

For the bottlenose dolphin densities, Roberts *et al*. (2016b, 2017, 2018) does not differentiate by stock. The Western North Atlantic northern migratory coastal stock is generally expected to occur only in coastal waters from the shoreline to approximately the 20-m (65-ft) isobath (Hayes *et al*., 2018). Both of these stocks have the potential to occur in the Northern and Southern survey areas. To account for the potential for mixed stocks within the survey areas, the densities of the two stocks were apportioned based on the 20-m isobaths contour. Any grid cells in the Roberts *et al.* data that feel entirely inshore of the 20-m isobaths were assigned to the coastal migratory stock. Any grid cells that fell outside this 20-m isobaths were apportioned to the offshore stock.

Densities from both of the survey sites were averaged annually to provide a density estimate for each species (Table 6). Please see Table 6 for density values used in the exposure estimation process. Additional data regarding average group sizes from survey effort in the region was considered to ensure adequate take estimates are evaluated.

Table 6. Maximum Seasonal Marine Mammal Densities (Number of Animals per 100 km^2) in the Northern and Southern Survey Areas

Species groups	Marine Mammal Species	Stock	Mean Annual Density (Number of animals/100km^2) [a]	
			Northern Survey Area	Southern Survey Area
Cetaceans	North Atlantic right whale	Western North Atlantic	0.169	0.102
	Fin whale	Western North Atlantic	0.154	0.058
	Sperm whale	North Atlantic	0.017	0.002
	Humpback whale	Gulf of Maine	0.042	0.040
	Common minke whale	Canadian East Coast	0.044	0.010
	Risso's dolphin	Western North Atlantic	0.014	0.001
	Long-finned pilot whale	Western North Atlantic	0.108	0.005
	Short-finned pilot whale	Western North Atlantic	0.108	0.005
	Atlantic white-sided dolphin	Western North Atlantic	0.836	0.092
	Common dolphin (short-beaked)	Western North Atlantic	5.692	0.739
	Common bottlenose dolphin	Western North Atlantic – Offshore	2.616	8.158
		Western North Atlantic – Coastal Migratory	14.203	33.409
	Atlantic spotted dolphin	Western North Atlantic	0.129	0.004
	Harbor porpoise	Gulf of Maine/Bay of Fundy	3.012	0.874
Pinnipeds	Harbor seal	Western North Atlantic	1.690	1.226
	Gray seal	Western North Atlantic	1.690	1.226

[a] All density data was derived from Roberts *et al.* (2016a, 2016b, 2017, 2018, 2020, 2021a, and 2021b)

Take Calculation and Estimation

Here we describe how the information provided above is brought together to produce a quantitative take estimate.

In order to estimate the number of marine mammals predicted to be exposed to sound levels that would result in harassment, radial distances to predicted isopleths corresponding to Level B harassment thresholds are calculated, as described above. The maximum distance (*i.e.*, 141-m distance associated with the Medium SBPs) to the Level B harassment criterion and the estimated distance traveled per day by a given survey vessel (*i.e.*, 62-km (38.5-mi)) are then used to calculate the daily ensonified area, or zone of influence (ZOI) around the survey vessel.

NEETMA estimates that proposed surveys will achieve a maximum daily track line distance of 62 km per day (24-hour period) during proposed HRG surveys. This distance accounts for the vessel traveling at approximately 4-knots and accounts for non-active survey periods. Based on the maximum estimated distance to the Level B harassment threshold of 141-m (refer back to Table 5) and the maximum estimated daily track line distance of 62-km across both survey sites, an area of 5,183.97-km^2 would be ensonified to the Level B harassment threshold during NEETMA's proposed surveys (Table 7) based on the following formula:

$$Mobile\ Source\ ZOI = (Distance/day \times 2r) + \pi r^2$$

Where: Distance/day = the maximum distance a survey vessel could travel in a 24-hour period; and r = the maximum radial distance from a given sound source to the NOAA Level B harassment thresholds.

Table 7. ZOI for each type of representative HRG survey equipment

Equipment Type	Largest Harassment Isopleth in km (m); r	Distance/day in km	ZOI (km^2)
Shallow SBP	0.048 (48)	62	5.98

Medium SBP (sparker)	0.141 (141)		17.61

These calculated ZOIs were than input to yield the total ensonified area per day (in km^2), as shown in Table 8 below.

Table 8. HRG Survey Area Distances for NEETMA's Proposed Project

HRG Survey Equipment Type	Specific equipment used			Largest harassment isopleth; r (km)	Survey distances per day (km)[1]	Calculated ZOI per day (km^2)
Shallow SBP	TB CHIRP III			0.048	62	5.98
Medium (SBP)	AA, Dura-spark UHD (500 J/400 tip)	AA, Dura-spark UHD 400+400	GeoMarine Geo Spark 2000 (400 tip)	0.141		17.61

1- Assumes 24-hours of survey activity during the proposed project.

As described above, this is a conservative estimate as it assumes the HRG source that results in the greatest isopleth distance to the Level B harassment threshold would be operated at all times during the entire survey, which may not ultimately occur.

The number of marine mammals expected to be incidentally taken per day is then calculated by estimating the number of each species predicted to occur within the daily ensonified area (animals/km^2), incorporating the maximum seasonal estimated marine mammal densities as described above. Estimated numbers of each species taken per day across both survey sites are then multiplied by the total number of survey days (*i.e.*, 320). The product is then rounded, to generate an estimate of the total number of instances of harassment expected for each species over the duration of the survey. A summary of this method is illustrated in the following formula with the resulting proposed take of marine mammals is shown below in Table 11:

$$Estimated\ Take = D \times ZOI \times \#\ of\ days$$

Where: D = average species density (per km^2); and ZOI = maximum daily ensonified area to relevant thresholds.

Table 11. Total Estimated Takes by Level B Harassment and Percent of Population/Stock Proposed for NEETMA's Project

Marine Mammal Species	Stock	Calculated Level B take		Proposed Level B take	
		Northern Survey Area	Southern Survey Area	Proposed [a]	% stock [c]
North Atlantic right whale	Western North Atlantic	7.40	0.83	8	2.17
Fin whale	Western North Atlantic	6.73	0.47	7	0.10
Sperm whale	North Atlantic	0.73	0.02	3	0.07
Humpback whale	Gulf of Maine	1.83	0.33	3 (6)[b]	0.21 (0.43)[b]
Common minke whale	Canadian East Coast	1.92	0.08	2	0.01
Risso's dolphin	Western North Atlantic	0.62	0.01	30	0.09
Long-finned pilot whale	Western North Atlantic	4.72	0.04	20	0.05
Short-finned pilot whale	Western North Atlantic	4.72	0.04	20	0.07
Atlantic white-sided dolphin	Western North Atlantic	36.52	0.76	37	0.04
Common dolphin (short-beaked)	Western North Atlantic	248.52	6.04	255	0.15
Common bottlenose dolphin	Western North Atlantic – Offshore	53.88	9.27	63	0.10
	Western North Atlantic – Coastal Migratory	325.25	235.27	561	8.45
Atlantic spotted dolphin	Western North Atlantic	5.61	0.03	100	0.25
Harbor porpoise	Gulf of Maine/Bay of Fundy	131.51	7.15	139	0.15
Harbor seal	Western North Atlantic	73.77	10.02	84	0.14
Gray seal	Western North Atlantic	73.77	10.02	84	0.31

a – All of these values were requested by NEETMA, with exception for the value in parenthesis found for humpback whales.

b – The values in parenthesis were a proposed adjustment by NMFS based on a proposed adjustment to account for higher recorded occurrences of humpback whales in the New York Bight area (see King *et al*., 2021).

c - Calculated percentages of population/stock were based on the population estimates (Nest) found in the NMFS's draft 2021 U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessment on NMFS's website (*https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports*).

Adjustments have been made for sperm whales (Barkaszi and Kelly, 2019), Risso's dolphin (Baird *et al*., 1991; Barkaszi and Kelly, 2019), pilot whales *spp.*(CETAP, 1982), and Atlantic spotted dolphins (Jefferson *et al*., 2008) based on typical group sizes due to estimated takes lower than the predicted group size. The take numbers shown in Table 11 represent those originally calculated and requested by NEETMA with minor modifications proposed by NMFS for one species.

Based on recent information from King *et al*. (2021) that demonstrated that the humpback whale is commonly sighted along the New York Bight area, NMFS determined that the humpback whale take request may be too low given the occurrence of animals near the survey area. Because of this, NMFS proposes to increase the requested take to account for underestimates to the actual occurrence of this species within the density data.

Proposed Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and

technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned), and;

(2) The practicability of the measures for applicant implementation, which may consider such things as cost and impact on operations.

Mitigation for Marine Mammals and their Habitat

NMFS proposes the following mitigation measures be implemented during NEETMA's proposed marine site characterization surveys. Pursuant to section 7 of the ESA, NEETMA would also be required to adhere to relevant Project Design Criteria (PDC) of the NMFS' Greater Atlantic Regional Fisheries Office (GARFO) programmatic consultation (specifically PDCs 4, 5, and 7) regarding geophysical surveys along the U.S. Atlantic coast (*https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-take-reporting-programmatics-greater-atlantic#offshore-wind-site-assessment-and-site-characterization-activities-programmatic-consultation*).

Marine Mammal Exclusion Zones and Harassment Zones

Marine mammal exclusion zones (EZ) would be established around the HRG survey equipment and monitored by NMFS-approved protected species observers (PSOs):

- 500 m EZ for North Atlantic right whales during use of specified acoustic sources (sparkers, boomers, and non-parametric sub-bottom profilers).
- 100 m EZ for all other marine mammals, with certain exceptions specified below, during operation of impulsive acoustic sources (boomer and/or sparker).

If a marine mammal is detected approaching or entering the EZs during the HRG survey, the vessel operator would adhere to the shutdown procedures described below to minimize noise impacts on the animals. These stated requirements will be included in the site-specific training to be provided to the survey team.

Pre-Start Clearance

Marine mammal clearance zones would be established around the HRG survey equipment and monitored by protected species observers (PSOs):

- 500 m for all ESA-listed marine mammals; and,
- 100 m for all other marine mammals.

NEETMA would implement a 30-minute pre-start clearance period prior to the initiation of ramp-up of specified HRG equipment (see exception to this requirement in the Shutdown Procedures section below). During this period, clearance zones will be monitored by the PSOs, using the appropriate visual technology. Ramp-up may not be initiated if any marine mammal(s) is within its respective clearance zone. If a marine mammal is observed within a clearance zone during the pre-start clearance period, ramp-up may not begin until the animal(s) has been observed exiting its respective exclusion zone or until an additional time period has elapsed with no further sighting (*i.e.*, 15 minutes for small odontocetes and seals, and 30 minutes for all other species).

Ramp-Up of Survey Equipment

A ramp-up procedure, involving a gradual increase in source level output, is required at all times as part of the activation of the acoustic source when technically feasible. The ramp-up procedure would be used at the beginning of HRG survey activities in order to provide additional protection to marine mammals near the survey area by allowing them to vacate the area prior to the commencement of survey equipment operation at full power. Operators should ramp up sources to half power for 5 minutes and then proceed to full power.

Ramp-up activities will be delayed if a marine mammal(s) enters its respective exclusion zone. Ramp-up will continue if the animal has been observed exiting its respective exclusion zone or until an additional time period has elapsed with no further sighting (*i.e.*, 15 minutes for small odontocetes and seals and 30 minutes for all other species).

Ramp-up may occur at times of poor visibility, including nighttime, if appropriate visual monitoring has occurred with no detections of marine mammals in the 30 minutes prior to beginning ramp-up. Acoustic source activation may only occur at night where operational planning cannot reasonably avoid such circumstances.

Shutdown Procedures

An immediate shutdown of the impulsive HRG survey equipment would be required if a marine mammal is sighted entering or within its respective exclusion zone. The vessel operator must comply immediately with any call for shutdown by the Lead PSO. Any disagreement between the Lead PSO and vessel operator should be discussed only after shutdown has occurred. Subsequent restart of the survey equipment can be initiated if the animal has been observed exiting its respective exclusion zone or until an additional time period has elapsed (*i.e.*, 15 minutes for harbor porpoise, 30 minutes for all other species).

If a species for which authorization has not been granted, or, a species for which authorization has been granted but the authorized number of takes have been met, approaches or is observed within the Level B harassment zone (refer back to Table 5), shutdown would occur.

If the acoustic source is shut down for reasons other than mitigation (*e.g.*, mechanical difficulty) for less than 30 minutes, it may be activated again without ramp-up if PSOs have maintained constant observation and no detections of any marine mammal have occurred within the respective exclusion zones. If the acoustic source is shut down for a period longer than 30 minutes, then pre-clearance and ramp-up procedures will be initiated as described in the previous section.

The shutdown requirement would be waived for pinnipeds and for small delphinids of the following genera: *Delphinus*, *Lagenorhynchus*, *Stenella*, and *Tursiops*. Specifically, if a delphinid from the specified genera or a pinniped is visually detected approaching the vessel (*i.e.*, to bow ride) or towed equipment, shutdown is not required. Furthermore, if there is uncertainty regarding identification of a marine mammal species (*i.e.*, whether the observed marine mammal(s) belongs to one of the delphinid genera for which shutdown is waived), PSOs must use best professional judgement in making the decision to call for a shutdown. Additionally, shutdown is required if a delphinid or pinniped is detected in the exclusion zone and belongs to a genus other than those specified.

Shutdown, pre-start clearance, and ramp-up procedures are not required during HRG survey operations using only non-impulsive sources (*e.g.,* echosounders) other than non-parametric sub-bottom profilers (*e.g.*, CHIRPs).

Vessel Strike Avoidance

NEETMA must adhere to the following measures except in the case where compliance would create an imminent and serious threat to a person or vessel or to the

extent that a vessel is restricted in its ability to maneuver and, because of the restriction, cannot comply.

- Vessel operators and crews must maintain a vigilant watch for all protected species and slow down, stop their vessel, or alter course, as appropriate and regardless of vessel size, to avoid striking any protected species. A visual observer aboard the vessel must monitor a vessel strike avoidance zone based on the appropriate separation distance around the vessel (distances stated below). Visual observers monitoring the vessel strike avoidance zone may be third-party observers (*i.e.*, PSOs) or crew members, but crew members responsible for these duties must be provided sufficient training to 1) distinguish protected species from other phenomena and 2) broadly to identify a marine mammal as a right whale, other whale (defined in this context as sperm whales or baleen whales other than right whales), or other marine mammal.

- Members of the monitoring team will consult NMFS North Atlantic right whale reporting system and WhaleAlert (*http://www.whalealert.org*), as able, for the presence of North Atlantic right whales throughout survey operations, and for the establishment of a DMA. If NMFS should establish a DMA in the survey area during the survey, the vessels will abide by speed restrictions in the DMA.

- All survey vessels, regardless of size, must observe a 10-knot speed restriction in specific areas designated by NMFS for the protection of North Atlantic right whales from vessel strikes including seasonal management areas (SMAs) and dynamic management areas (DMAs) when in effect;

- All vessels greater than or equal to 19.8 m in overall length operating from November 1 through April 30 will operate at speeds of 10 knots or less at all times;

- All vessels must reduce their speed to 10 knots or less when mother/calf pairs, pods, or large assemblages of cetaceans are observed near a vessel;

- All vessels must maintain a minimum separation distance of 500 m from right whales and other ESA-listed large whales;
- If a whale is observed but cannot be confirmed as a species other than a right whale or other ESA-listed large whale, the vessel operator must assume that it is a right whale and take appropriate action;
- All vessels must maintain a minimum separation distance of 100 m from non-ESA listed whales;
- All vessels must, to the maximum extent practicable, attempt to maintain a minimum separation distance of 50 m from all other marine mammals, with an understanding that at times this may not be possible (*e.g.*, for animals that approach the vessel).
- When marine mammals are sighted while a vessel is underway, the vessel shall take action as necessary to avoid violating the relevant separation distance (*e.g.*, attempt to remain parallel to the animal's course, avoid excessive speed or abrupt changes in direction until the animal has left the area). If marine mammals are sighted within the relevant separation distance, the vessel must reduce speed and shift the engine to neutral, not engaging the engines until animals are clear of the area. This does not apply to any vessel towing gear or any vessel that is navigationally constrained.

Project-specific training will be conducted for all vessel crew prior to the start of a survey and during any changes in crew such that all survey personnel are fully aware and understand the mitigation, monitoring, and reporting requirements. Prior to implementation with vessel crews, the training program will be provided to NMFS for review and approval. Confirmation of the training and understanding of the requirements will be documented on a training course log sheet. Signing the log sheet will certify that the crew member understands and will comply with the necessary requirements throughout the survey activities.

Based on our evaluation of the applicant's proposed measures, as well as other measures considered by NMFS, we have preliminarily determined that the proposed mitigation measures provide the means of effecting the least practicable impact on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Proposed Monitoring and Reporting

In order to issue an IHA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the proposed action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas);

- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and,
- Mitigation and monitoring effectiveness.

Proposed Monitoring Measures

Visual monitoring will be performed by qualified, NMFS-approved PSOs, the resumes of whom will be provided to NMFS for review and approval prior to the start of survey activities. NEETMA would employ independent, dedicated, trained PSOs, meaning that the PSOs must 1) be employed by a third-party observer provider, 2) have no tasks other than to conduct observational effort, collect data, and communicate with and instruct relevant vessel crew with regard to the presence of marine mammals and mitigation requirements (including brief alerts regarding maritime hazards), and 3) have successfully completed an approved PSO training course appropriate for their designated task. On a case-by-case basis, non-independent observers may be approved by NMFS for limited, specific duties in support of approved, independent PSOs on smaller vessels with limited crew capacity operating in nearshore waters. Section 5 of the draft IHA contains further details regarding PSO approval.

The PSOs will be responsible for monitoring the waters surrounding each survey vessel to the farthest extent permitted by sighting conditions, including exclusion zones, during all HRG survey operations. PSOs will visually monitor and identify marine mammals, including those approaching or entering the established exclusion zones during

survey activities. It will be the responsibility of the Lead PSO on duty to communicate the presence of marine mammals as well as to communicate the action(s) that are necessary to ensure mitigation and monitoring requirements are implemented as appropriate.

During all HRG survey operations (*e.g.*, any day on which use of an HRG source is planned to occur), a minimum of one PSO must be on duty during daylight operations on each survey vessel, conducting visual observations at all times on all active survey vessels during daylight hours (*i.e.*, from 30 minutes prior to sunrise through 30 minutes following sunset). Two PSOs will be on watch during nighttime operations. The PSO(s) would ensure 360° visual coverage around the vessel from the most appropriate observation posts and would conduct visual observations using binoculars and/or night vision goggles and the naked eye while free from distractions and in a consistent, systematic, and diligent manner. PSOs may be on watch for a maximum of 4 consecutive hours followed by a break of at least 2 hours between watches and may conduct a maximum of 12 hours of observation per 24-hr period. In cases where multiple vessels are surveying concurrently, any observations of marine mammals would be communicated to PSOs on all nearby survey vessels.

PSOs must be equipped with binoculars and have the ability to estimate distance and bearing to detect marine mammals, particularly in proximity to exclusion zones. Reticulated binoculars must also be available to PSOs for use as appropriate based on conditions and visibility to support the sighting and monitoring of marine mammals. During nighttime operations, night-vision goggles with thermal clip-ons and infrared technology would be used. Position data would be recorded using hand-held or vessel GPS units for each sighting.

During good conditions (*e.g.,* daylight hours; Beaufort sea state (BSS) 3 or less), to the maximum extent practicable, PSOs would also conduct observations when the

acoustic source is not operating for comparison of sighting rates and behavior with and without use of the active acoustic sources. Any observations of marine mammals by crew members aboard any vessel associated with the survey would be relayed to the PSO team. Data on all PSO observations would be recorded based on standard PSO collection requirements. This would include dates, times, and locations of survey operations; dates and times of observations, location and weather; details of marine mammal sightings (*e.g.*, species, numbers, behavior); and details of any observed marine mammal behavior that occurs (*e.g*., noted behavioral disturbances).

Proposed Reporting Measures

Within 90 days after completion of survey activities or expiration of this IHA, whichever comes sooner, a draft report will be provided to NMFS that fully documents the methods and monitoring protocols, summarizes the data recorded during monitoring, summarizes the number of marine mammals observed during survey activities (by species, when known), summarizes the mitigation actions taken during surveys (including what type of mitigation and the species and number of animals that prompted the mitigation action, when known), and provides an interpretation of the results and effectiveness of all mitigation and monitoring. A final report must be submitted within 30 days following resolution of any comments on the draft report. All draft and final marine mammal and acoustic monitoring reports must be submitted to *PR.ITP.MonitoringReports@noaa.gov* and *ITP.Potlock@noaa.gov*. The report must contain at minimum, the following:

- PSO names and affiliations;
- Dates of departures and returns to port with port name;
- Dates and times (Greenwich Mean Time) of survey effort and times corresponding with PSO effort;
- Vessel location (latitude/longitude) when survey effort begins and ends;

- Vessel location at beginning and end of visual PSO duty shifts;
- Vessel heading and speed at beginning and end of visual PSO duty shifts and upon any line change;
- Environmental conditions while on visual survey (at beginning and end of PSO shift and whenever conditions change significantly), including wind speed and direction, Beaufort sea state, Beaufort wind force, swell height, weather conditions, cloud cover, sun glare, and overall visibility to the horizon;
- Factors that may be contributing to impaired observations during each PSO shift change or as needed as environmental conditions change (*e.g.*, vessel traffic, equipment malfunctions); and
- Survey activity information, such as type of survey equipment in operation, acoustic source power output while in operation, and any other notes of significance (*i.e.*, pre-start clearance survey, ramp-up, shutdown, end of operations, etc.).

If a marine mammal is sighted, the following information should be recorded:

- Watch status (sighting made by PSO on/off effort, opportunistic, crew, alternate vessel/platform);
- PSO who sighted the animal;
- Time of sighting;
- Vessel location at time of sighting;
- Water depth;
- Direction of vessel's travel (compass direction);
- Direction of animal's travel relative to the vessel;
- Pace of the animal;
- Estimated distance to the animal and its heading relative to vessel at initial sighting;

- Identification of the animal (*e.g.*, genus/species, lowest possible taxonomic level, or unidentified); also note the composition of the group if there is a mix of species;
- Estimated number of animals (high/low/best);
- Estimated number of animals by cohort (adults, yearlings, juveniles, calves, group composition, etc.);
- Description (as many distinguishing features as possible of each individual seen, including length, shape, color, pattern, scars or markings, shape and size of dorsal fin, shape of head, and blow characteristics);
- Detailed behavior observations (*e.g.*, number of blows, number of surfaces, breaching, spyhopping, diving, feeding, traveling; as explicit and detailed as possible; note any observed changes in behavior);
- Animal's closest point of approach and/or closest distance from the center point of the acoustic source;
- Platform activity at time of sighting (*e.g.*, deploying, recovering, testing, data acquisition, other); and
- Description of any actions implemented in response to the sighting (*e.g.*, delays, shutdown, ramp-up, speed or course alteration, etc.) and time and location of the action.

If a North Atlantic right whale is observed at any time by PSOs or personnel on any project vessels, during surveys or during vessel transit, NEETMA must immediately report sighting information to the NMFS North Atlantic Right Whale Sighting Advisory System: (866) 755-6622. North Atlantic right whale sightings in any location may also be reported to the U.S. Coast Guard via Channel 16.

In the event that NEETMA personnel discover an injured or dead marine mammal, NEETMA will report the incident to the NMFS Office of Protected Resources

(OPR) and the NMFS New England/Mid-Atlantic Stranding Coordinator (978-282-8478 or 978-281-9291) as soon as feasible. The report would include the following information:

- Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
- Species identification (if known) or description of the animal(s) involved;
- Condition of the animal(s) (including carcass condition if the animal is dead);
- Observed behaviors of the animal(s), if alive;
- If available, photographs or video footage of the animal(s); and
- General circumstances under which the animal was discovered.

In the unanticipated event of a ship strike of a marine mammal by any vessel involved in the activities covered by the IHA, NEETMA would report the incident to the NMFS OPR and the NMFS New England/Mid-Atlantic Stranding Coordinator (978-282-8478 or 978-281-9291) as soon as feasible. The report would include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Species identification (if known) or description of the animal(s) involved;
- Vessel's speed during and leading up to the incident;
- Vessel's course/heading and what operations were being conducted (if applicable);
- Status of all sound sources in use;
- Description of avoidance measures/requirements that were in place at the time of the strike and what additional measures were taken, if any, to avoid strike;
- Environmental conditions (*e.g.*, wind speed and direction, Beaufort sea state, cloud cover, visibility) immediately preceding the strike;

- Estimated size and length of animal that was struck;
- Description of the behavior of the marine mammal immediately preceding and following the strike;
- If available, description of the presence and behavior of any other marine mammals immediately preceding the strike;
- Estimated fate of the animal (*e.g.*, dead, injured but alive, injured and moving, blood or tissue observed in the water, status unknown, disappeared); and
- To the extent practicable, photographs or video footage of the animal(s).

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (i.e., population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be "taken" through harassment, NMFS considers other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of the mitigation. NMFS also assesses the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS's implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, our analysis applies to all the species listed in Table 3 given that NMFS expects the anticipated effects of the proposed survey to be similar in nature. Where there are meaningful differences between species or stocks - as is the case of the North Atlantic right whale - they are included as separate subsections below. NMFS does not anticipate that serious injury or mortality would occur as a result from HRG surveys, even in the absence of mitigation, and no serious injury or mortality is proposed to be authorized. As discussed in the **Potential Effects of Specified Activities on Marine Mammals and their Habitat** section, non-auditory physical effects and vessel strike are not expected to occur. NMFS expects that all potential takes would be in the form of short-term Level B behavioral harassment in the form of temporary avoidance of the area or decreased foraging (if such activity was occurring), reactions that are considered to be of low severity and with no lasting biological consequences (*e.g.*, Southall *et al.*, 2007). Even repeated Level B harassment of some small subset of an overall stock is unlikely to result in any significant realized decrease in viability for the affected individuals, and thus would not result in any adverse impact to the stock as a whole. As described above, Level A harassment is not expected to occur given the nature of the operations and the estimated size of the Level A harassment zones.

In addition to being temporary, the maximum expected harassment zone around a survey vessel is 141 m. Although this distance is assumed for all survey activities in estimating take numbers proposed for authorization and evaluated here, in reality much of the survey activity would involve use of non-impulsive acoustic sources with a reduced acoustic harassment zone of 48 m, producing expected effects of particularly low severity. Therefore, the ensonified area surrounding each vessel is relatively small compared to the overall distribution of the animals in the area and their use of the habitat. Feeding behavior is not likely to be significantly impacted as prey species are mobile and are broadly distributed throughout the survey area; therefore, marine mammals that may

be temporarily displaced during survey activities are expected to be able to resume foraging once they have moved away from areas with disturbing levels of underwater noise. Because of the temporary nature of the disturbance and the availability of similar habitat and resources in the surrounding area, the impacts to marine mammals and the food sources that they utilize are not expected to cause significant or long-term consequences for individual marine mammals or their populations.

There are no rookeries, mating or calving grounds known to be biologically important to marine mammals within the proposed survey area and there are no feeding areas known to be biologically important to marine mammals within the proposed survey area. There is no designated critical habitat for any ESA-listed marine mammals in the proposed survey area.

North Atlantic Right Whales

The status of the North Atlantic right whale population is of heightened concern and, therefore, merits additional analysis. As noted previously, elevated North Atlantic right whale mortalities began in June 2017 and there is an active UME. Overall, preliminary findings support human interactions, specifically vessel strikes and entanglements, as the cause of death for the majority of right whales. As noted previously, the proposed survey area overlaps a migratory corridor BIA for North Atlantic right whales. Due to the fact that the proposed survey activities are temporary and the spatial extent of sound produced by the survey would be very small relative to the spatial extent of the available migratory habitat in the BIA, right whale migration is not expected to be impacted by the proposed survey. Given the relatively small size of the ensonified area, it is unlikely that prey availability would be adversely affected by HRG survey operations. Required vessel strike avoidance measures will also decrease risk of ship strike during migration; no ship strike is expected to occur during NEETMA's proposed activities. Additionally, only very limited take by Level B harassment of North

Atlantic right whales has been requested and is being proposed for authorization by NMFS as HRG survey operations are required to maintain a 500 m EZ and shutdown if a North Atlantic right whale is sighted at or within the EZ. The 500 m shutdown zone for right whales is conservative, considering the Level B harassment isopleth for the most impactful acoustic source (*i.e.*, sparker) is estimated to be 141 m, and thereby minimizes the potential for behavioral harassment of this species. As noted previously, Level A harassment is not expected due to the small PTS zones associated with HRG equipment types proposed for use. NMFS does not anticipate North Atlantic right whales takes that would result from NEETMA's proposed activities would impact annual rates of recruitment or survival. Thus, any takes that occur would not result in population level impacts.

Other Marine Mammal Species with Active UMEs

As noted previously, there are several active UMEs occurring in the vicinity of NEETMA's proposed survey area. Elevated humpback whale mortalities have occurred along the Atlantic coast from Maine through Florida since January 2016. Of the cases examined, approximately half had evidence of human interaction (ship strike or entanglement). The UME does not yet provide cause for concern regarding population-level impacts. Despite the UME, the relevant population of humpback whales (the West Indies breeding population, or DPS) remains stable at approximately 12,000 individuals.

Beginning in January 2017, elevated minke whale strandings have occurred along the Atlantic coast from Maine through South Carolina, with highest numbers in Massachusetts, Maine, and New York. This event does not provide cause for concern regarding population level impacts, as the likely population abundance is greater than 20,000 whales.

The required mitigation measures are expected to reduce the number and/or severity of proposed takes for all species listed in Table 3, including those with active

UMEs, to the level of least practicable adverse impact. In particular they would provide animals the opportunity to move away from the sound source throughout the survey area before HRG survey equipment reaches full energy, thus preventing them from being exposed to sound levels that have the potential to cause injury (Level A harassment) or more severe Level B harassment. No Level A harassment is anticipated, even in the absence of mitigation measures, or proposed for authorization.

NMFS expects that takes would be in the form of short-term Level B behavioral harassment by way of brief startling reactions and/or temporary vacating of the area, or decreased foraging (if such activity was occurring)—reactions that (at the scale and intensity anticipated here) are considered to be of low severity, with no lasting biological consequences. Since both the sources and marine mammals are mobile, animals would only be exposed briefly to a small ensonified area that might result in take. Additionally, required mitigation measures would further reduce exposure to sound that could result in more severe behavioral harassment.

Biologically Important Areas for Other Species

As previously discussed, impacts from the proposed project are expected to be localized to the specific area of activity and only during periods of time where NEETMA's acoustic sources are active. While areas of biological importance to fin whales, humpback whales, and harbor seals can be found off the coast of New Jersey and New York, NMFS does not expect this proposed action to affect these areas. These important areas are found outside of the range of this survey area, as is the case with fin whales and humpback whales (BIAs found further north), and, therefore, not expected to be impacted by NEETMA's proposed survey activities.

There are three major haul-out sites exist for harbor seals along New Jersey, including at Great Bay, Sand Hook, and Barnegat Inlet (CWFNJ, 2015). As hauled out seals would be out of the water, no in-water effects are expected.

Preliminary Determinations

In summary and as described above, the following factors primarily support our preliminary determination that the impacts resulting from this activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No mortality or serious injury is anticipated or proposed for authorization;
- No Level A harassment is anticipated, even in the absence of mitigation measures, or proposed for authorization;
- Foraging success is not likely to be significantly impacted as effects on species that serve as prey species for marine mammals from the survey are expected to be minimal;
- The availability of alternate areas of similar habitat value for marine mammals to temporarily vacate the survey area during the planned survey to avoid exposure to sounds from the activity;
- Take is anticipated to be by Level B behavioral harassment only, consisting of brief startling reactions and/or temporary avoidance of the survey area;
- While the survey area is within areas noted as a migratory BIA for North Atlantic right whales, the activities would occur in such a comparatively small area such that any avoidance of the survey area due to activities would not affect migration. In addition, mitigation measures require shutdown at 500 m (almost four times the size of the Level B harassment isopleth (141 m)), which minimizes the effects of the take on the species; and,
- The proposed mitigation measures, including visual monitoring and shutdowns, are expected to minimize potential impacts to marine mammals.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the

implementation of the proposed mitigation, monitoring, and reporting measures, NMFS preliminarily finds that the total marine mammal take from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under sections 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is fewer than one third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

NMFS proposes to authorize incidental take of 15 marine mammal species (with 16 managed stocks). The total amount of takes proposed for authorization relative to the best available population abundance is less than 8.5 percent for all stocks which NMFS preliminarily finds are small numbers of marine mammals relative to the estimated overall population abundances for those stocks. Refer back to Table 3.

Based on the analysis contained herein of the proposed activity (including the proposed mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS preliminarily finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has determined that the total taking

of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA: 16 U.S.C. 1531 et seq.) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS Office of Protected Resources (OPR) consults internally whenever we propose to authorize take for endangered or threatened species. NMFS is authorizing the incidental take of four species of marine mammals which are listed under the ESA, including the North Atlantic right, fin, and sperm whale, and has determined that these activities fall within the scope of activities analyzed 107 in GARFO's programmatic consultation regarding geophysical surveys along the U.S. Atlantic coast in the three Atlantic Renewable Energy Regions (completed June 29, 2021; revised September 2021).**Proposed Authorization**

As a result of these preliminary determinations, NMFS proposes to issue an IHA to NEETMA for conducting high-resolution site characterization surveys off New Jersey for one year from the date of issuance, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. A draft of the proposed IHA can be found at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-other-energy-activities-renewable*.

Request for Public Comments

We request comment on our analyses, the proposed authorization, and any other aspect of this notice of proposed IHA for the proposed marine site characterization surveys. We also request at this time comment on the potential Renewal of this proposed IHA as described in the paragraph below. Please include with your comments any

supporting data or literature citations to help inform decisions on the request for this IHA or a subsequent Renewal IHA.

On a case-by-case basis, NMFS may issue a one-time, one-year Renewal IHA following notice to the public providing an additional 15 days for public comments when (1) up to another year of identical or nearly identical activities as described in the **Description of Proposed Activities** section of this notice is planned or (2) the activities as described in the **Description of Proposed Activities** section of this notice would not be completed by the time the IHA expires and a Renewal would allow for completion of the activities beyond that described in the *Dates and Duration* section of this notice, provided all of the following conditions are met:

- A request for Renewal is received no later than 60 days prior to the needed Renewal IHA effective date (recognizing that the Renewal IHA expiration date cannot extend beyond one year from expiration of the initial IHA).
- The request for Renewal must include the following:

(1) An explanation that the activities to be conducted under the requested Renewal IHA are identical to the activities analyzed under the initial IHA, are a subset of the activities, or include changes so minor (*e.g.*, reduction in pile size) that the changes do not affect the previous analyses, mitigation and monitoring requirements, or take estimates (with the exception of reducing the type or amount of take).

(2) A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.

Upon review of the request for Renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures will remain the same and appropriate, and the findings in the initial IHA remain valid.

Dated: May 4, 2022.

Kimberly Damon-Randall,

Director, Office of Protected Resources,

National Marine Fisheries Service.

[FR Doc. 2022-09917 Filed: 5/6/2022 8:45 am; Publication Date: 5/9/2022]